ACE MEETING, June 8, 2004

- Tevatron Status
  - Tevatron continues to set new record initial luminosities over 80E30! Abort gap losses, proton losses, and proton spikes have been problem but we started at least one run with COT full on, silicon, and a luminosity of 74E30. Young Kee says we should concentrate on good data AND good efficiencies.
  - Run Coordinator eLog current - good place to find updates on status of Tevatron.
  - (Operations Coordinator (Rob Roser) eLog - pretty good place to find updates on status of CDF)
  - Continue to "stack and store" with shots about every 30-36 hours.

- New Aces Solo End of Week.
  - Watch the schedule and come in for a shot-setup if you have not had the opportunity so far on overlap shift.

- Miscellaneous Ace Items
  - eLog is something of an "art form"
    - The CDF eLog is a public document read by non-CDF people including the MCR and lab director. Stick to facts first and keep in mind the nature of the document when injecting humor or "light-heartedness".
    - If you make a mistake in an entry, correct it with a comment or a new entry. The "advanced edit" feature should only be used when html formatting has made the eLog unreadable. If you don't know about advanced edit, all the better!
    - Many people read the eLog from afar to keep up with status of detector. You may get unexpected help if you document problems concisely and quickly.
    - Try to get names whenever possible - who are the "experts"

working on it.
    - Make sure you learn difference between "html" and "plain" entries. (I have seen no problems so far.)
    - It is OK to rescale ACNET plots to make them readable and keep the plotted points from going off-scale. You are welcome to include extra plots at any time and/or make summaries of ongoing problems to help guide the experts.
    - If you skim the eLog when you are not on shift, it will be easier to come up to speed on current problems when you are back on shift. A lot can happen in 3-4 days!
  - Downtime Entries
    With the COT back on, Young Kee Kim wants to make sure we have no correctable inefficiencies. Please keep the downtime logger up-to-date and make sure comments are accurate.
  - Control and eLog Personalities
    Many of the CDF experts have strong personalities both in the Control Room and in the eLog. Please be assured that everyone knows being an ACE is a very difficult and demanding job and your work IS appreciated. If you have any problems with the way you feel you are treated, please let me (or Dee Hahn) know and we will help correct the situation. You do need to have a slightly "thick skin" in this position.

- Rick Tesarek on Beam Quality and Beam Loss Monitoring.

Run Coordinator E-log 09:58:47 Mon Jun 7 2004

-- Monday Status and Plans --

MemoPad

Studiers: J. Morgan

Start of Studies Notes: Store 3560 colliding and stacking.

10:21:14-

Notes from the 0900 Integration Meeting:
The present store had the second highest initial luminosity. Last week was our best week for integrated luminosity. We hope to work towards mixed-pbar source transfers this week.
Linac and Booster have both been running well, at or above record beam delivered to pbar and MiniBoone. Booster would like a short access on Thursday to do a radiation survey to correlate tunnel activation with the loss monitors.
Main Injector ran OK. The source of the longitudinal oscillations on higher pbar intensity shots is thought to be coming from a phase loop that has an amplifier and a number of attenuators effectively defeating the amplifier. They would like to replace the amplifier/attenuator combination with a cable of appropriate length to have the same phase relationship. Since we are planning to take test transfers to the mixed-source ramp after today's collider shot, we can do the cable swap and test it on these.
On Friday after resuming stacking, some time was taken to test the ramps to the shot lattice and back to make sure they were still looking OK after the Rings access (they were). Pbar is ready for the mixed source pbar operation. There was a shift of studies to work on the Debuncher vertical aperture last night.
The Tevatron reports that while CDF had an access on Friday, we also went into the Tevatron to install a PMT for the new synch. light detector. After the access, there were several short

duration studies while the pbar stack was being built up. The store on Saturday was ended by a clean abort that left no evidence of why it occured. After the meeting, Controls had identified an abort concentrator card that was not working properly and will be changed between stores. This is not to say that this was neccessarily what caused the lost store. During the present store, there have been several large spikes in LOSTP that has caused CDF to have detector trips. At least some of them correlate to the ground shaking at B0, often caused by the movement of large vehicles. At the end of this store, the CDF pots will be moved in manually, then via the sequencer. If all goes well, they will be returning to routine operation.
The Recycler got two more pbar transfers over the weekend, they generally went smoothly. They did more momentum mining work and are ready for the mixed-pbar source operation.
SY120 says that MIPP ran in a special mode this weekend. They are off during the day shift today, but should be back this weekend. Experts would like to run beam to the SY dump sometime this afternoon.
MiniBoone ran well and had another day over 1E18 delivered to the target.
NuMI patiently awaits an access into the MI tunnel. They also want to do power panel work that would turn off power to MI and Recycler trim magnets. Since the latter would kill circulating beam in the Recycler, this seems inconsistant with the current plan which requires pbars in the Recycler this week.
CDF had problems related to trips coming from LOSTP spikes. The vacuum vessel that was worked on last week is working OK. There was a reminder from the Tevatron side that with a 4 hour access into the collision hall with surveyors, they could attempt to brace the low beta quadrupoles to make them move less when the ground shakes (often the source of the LOSTP spikes).
D0 has been running smoothly, most of the experts are in a workshop in Fresno this week.

- JPM

10:24:51-

The Plan: End of store CDF pot manipulation begins around 1130 and should end around 1200. Then terminate the store and follow with shot setup. Shot strategy: Protons 275-295E9 per bunch at 150 GeV, take out 90% of the pbars (frequency width as per guidelines). A test of the mixed-pbar source ramps will follow

the collider shots with several small pbar transfers. After these are done (and the store is still in), stack to 40E10 and shoot to the Recycler

- JPM

15:30:06- Store 3562 is in, its a new record of 76.8E30. CDF losses appear to be a problem, not totally surprising because have been in new luminosity territory for the past couple of weeks. We did push the protons a little higher on this store, losses up the ramp appeared to be worse. We intentionally kept the individual pbar transfer intensities low because of recent problems with longitudinal blow-up in the Main Injector. This may be fixed after an amplifer is removed from the low level chain today. We are taking a few small shots to the Main Injector with the mixed-pbar mode ramp to make sure things are ready for a shot later this week. - JPM

15:40:27- Since the CDF pots checked out today, we will put them in at the mid-point of a store before considering them fully operational. If this store survives until tomorrow's day shift, we will do it then. - JPM

15:41:40-

The Plan: Stack to 40E10 and shoot to the Recycler, stack and store otherwise.

- JPM

Memopad | 1234567890123 | Elog Help

Params

CDF Operations -- 20:13:06 Wed Jun 2 2004

People: RR

Start of File Notes:

Week of June 1st

Wed Jun 2 20:20:58

Status Report -- June 2nd

Sorry for the late entry. I realize I missed yesturday.

Yesturday's store went in with an initial luminosity of about 68e30. We had the full detector on and were taking data. The losses/abort gap was large at time so we had to turn off a few times in order for the AD to deal with it. We also had to power down the solenoid 15 hours into the shot in order to pump down the watt can. The process went smoothly but it took 1 hour 45 minutes. We need to fix this!!! We had a few minor problems as well, one with level 3 that caused some delay.

The store ended for us early this morning - there were a few end of store studies and then a wet engine repair as well. Most of today's day shift was spent waiting for beam.

The next shot came in late afternoon. It was outstanding. Second best ever at 74e30. The losses were a bit high for our current specifications. We WILL change those specs from the 20khz limit to most likely 30khz in the next few days I promise. However, they are not changed yet so we lost some time while waiting. We also had some trouble at the start of the store with silicon. Operator error -- we will fix the checkout procedure to prevent this. After a bit of a slow start, we have been taking data smoothly with the entire detector in.

- RR

Thu Jun 3 14:06:49

Thursday update

We have been taking data fairly smoothly with this store. With the new higher luminosities, there is to be expected a learning curve on how to handle the losses. We will

most likely have to power down the solenoid twice this store
given its lifetime in order to keep running. At the end of
the store, we will be granted a two hour access to replace the
valve w hich will allow us to automate this system again!

I will be off this weekend. Carl will handle the updates.
My cell does work if problems arise.

- RR

Fri Jun 4 15:24:25

Ran well overnight with efficiency of 77%. Losses for TeV
scraping episodes, 10%, ramp solenoid to pump Watt can, 8%,
trigger deadtime, 3%, misc., 2%.

A 150 mA Accumulator stack was lost due to water spraying into
a power supply. Store was dropped at 11:00 with L ~ 10E30,
allowing a 2.5 hour CDF access. One of two bad valves
successfully replaced on the Watt can pumping system. Solenoid
can now stay on while pumping.

COT is operating with recirculating system and all superlayers
at full voltage. For a few stores next week we may allow a small
amount of air into the Ar-Ethane gas to see its effects on wire
aging. Also, efforts are underway to allow running with
an Ar-CO2 mixture. Small chamber tests with that mixture
are in progress.

Shot will go in as soon as a reasonable stack exists. If all
goes well, that should be before midnight.

- Carl Bromberg

Sun Jun 6 01:53:24

From a stack of 100E10, shot went in at midnight initial luminosity
58E30. Took data at 80% efficiency throughout -- losses were due to TeV
beam scraping, 10%, and a TOF glitch, trigger tests, and misc.
Store aborted cleanly at 15:00. Cause still under investigation. Stack
is 150E10 increasing at 7 mA/h. All CDF systems are ready for
collisions.

- Rob Harr per Carl Bromberg's request

Sun Jun 6 22:58:12

Store 3560 went in at about 02:00, initial B0 luminosity 78E30 (~ ties record). Smooth
running
until 08:00 when abort gap anomaly shut off data taking for about 45 minutes.

At 11:30 a big loss spike caused most muon chambers to trip. Then b0mutr00 (giving
errors earlier)

would not configure on new run. Eric James drove in, but spare was incompatible, repair of the
offending board was necessary. For further information, see EJ's report in the E-log. No useful data
for 4 hours.

At 19:00 large TeV losses kept blowing out configuration in VRB FIB crate. Data taking resumed 1.5
hours later, after MCR scraped to reduce losses. Store efficiency stands at 71%, but currently
running smoothly.

- Carl Bromberg

Mon Jun 7 16:30:42

With Rob still in Cali, Young Kee and I went to the Monday accelerator meeting in the Huddle. Clearly, last night was especially bad in terms of repeated muon trips and the coincident loss of a reformatter in a FIB crate--it was also clear to the shift crew, who had noted the state of C:B0PAGC and spikiness of C:LOSTP. Vladimir Shiltsev (Mr. TEL) made the statement that C:B0PAGC did not correlate well with the actual amount of beam in the abort gaps (as seen by sync light? he didn't say); JJ told me Rick Vidal believes C:B0PAGC tells how much beam is being **removed** from the abort gaps, but not necessarily the amount of beam in the abort gaps.

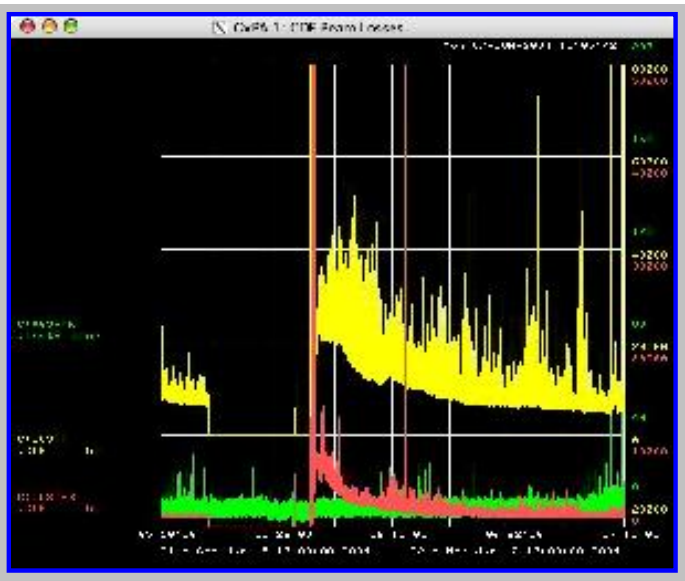
There was also discussion during and after the meeting with Jerry Annala, Todd Johnson, and Bob Mau about the installation of wood blocks; a new subject to me (not to Robb). The invar rods that the quad cradles are suspended from are attached to a beam at the ceiling of the collision hall. However, this beam is not attached to the ceiling, but instead at the east and west walls. A set of wood blocks (wedges, actually) to jam between this beam and ceiling, so as to reduce vibration, have been ready for installation for about a month. But some combination of Jim Volk, Mike McGee, and surveyors (to make sure alignment is not affected) have to be present during a 4 hour access to make this work, and so far as not materialized. Bob very much wants to get this done before the shutdown.

On the other hand, when I asked what the cause of the spikes we saw at around 1:00 AM and 5:30 AM last night, Todd thought they were all due to vibrations. He then plotted C:AQ3VPK vs. C:LOSTP, but there was no excursions in the vibration monitor on our Q3 magnet until this morning. We continued to look at other devices: it appeared there was a correlation with T:ORBITH (proton BPM at A0) but it was difficult to tell with the amount of noise on this device. Todd and Jerry then tried T:VPPA14 and T:HPPA15, new high-precision (due to improved electronics) proton BPMs at A14 and A15, the only ones installed so far. Here, the correlation was clearer. There also appeared to be some excursions in the TEL proton BPMs T:ELUHPP and T:ELUVPP. I include plots of all these below.

They also looked into temperature variation as a cause of quad movement or rotations, but there did not appear to be any smoking gun there. We should get in touch with Todd or Jerry, as they were going to continue to look into this.

- Steve Hahn

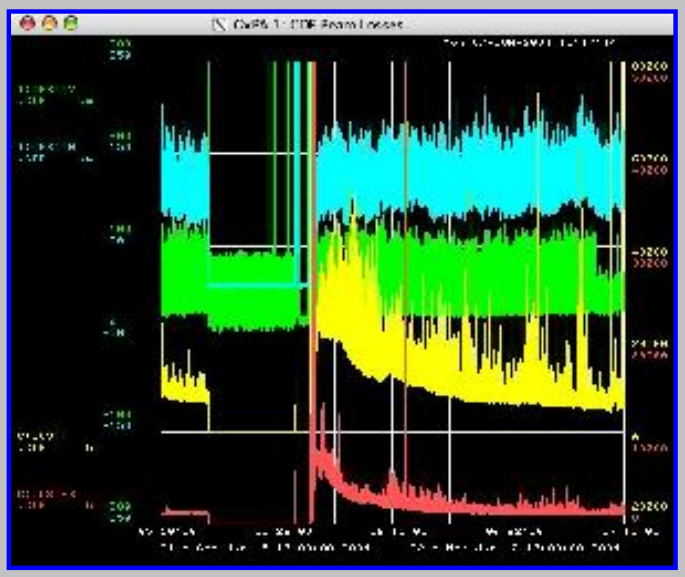
Mon Jun 7 16:35:00



The extended spikiness at around 1:00 AM and 5:30 AM last night does not correspond with excursions in the peak vibration rate at B0Q3.

- Steve Hahn

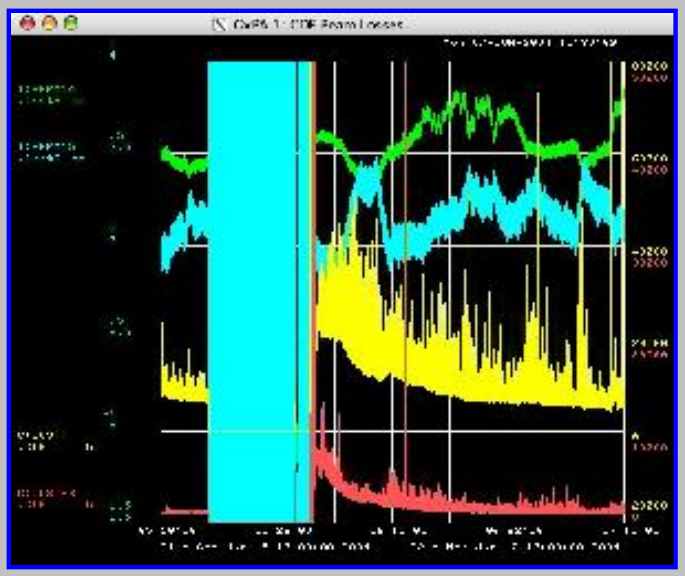
Mon Jun 7 16:36:35



There seems to be correlated excursions in T:ORBITH, but the level of noise in this amplified proton BPM signal at A0 makes it difficult to see.

- Steve Hahn

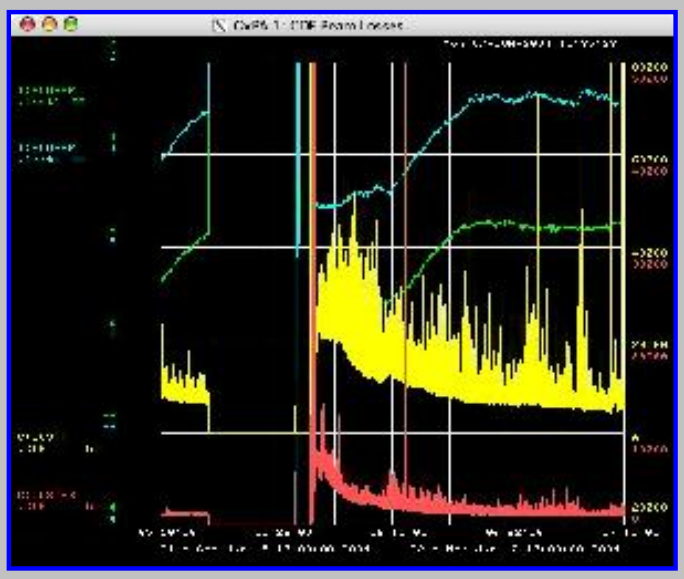
Mon Jun 7 16:39:06



Due to the improved S/N with these new "high presicion" proton BPMs at A14 and A15, the correlation is clearer. Further there seem to be related changes in the vertical position. And there are other excursions at other times which seem to have no related spikiness.

- Steve Hahn

Mon Jun 7 16:41:57



Also, the same changes can be seen in these TEL proton BPMs, T:ELUHPP and T:ELUVPP, at a much smaller level. Is the initial large rise due to increased beam losses or something else?

- Steve Hahn

Elog Help